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Annex "A," Subparagraph 3b,
Economic Background

INDUSTRIES

316 The industries of Southwest China fall into two major groups -- mining and manufacturing. Among the mining enterprises, the largest are those dealing with the production of tin, iron, coal, and copper. The tin production of Yunnan has been one of the main sources of supply for China and the world market. A major part of the nation's copper comes from Yunnan, Kweichow, and Sikang. Despite rapid growth during World War II, manufacturing industries in Southwest China has been relatively unimportant in comparison with those in Manchuria and some other sections of China.

I. MINING RESOURCES

A. Production of Tin

During the period, 1935-39, approximately 10,000 metric tons of tin were produced in China each year, equivalent to 5.5 to 7.8 per cent of the total production of the world, excluding Russia. During 1940-41, the world production of tin was maintained at a high level because of the demands of war, but the production of

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316 tin in China dwindled steadily when the war engulfed the mining regions. Output was as low as 2,000 metric tons in 1944 and 1945. During 1947-49, China's rate of production rose to 4,000 tons a year, but in terms of expanding world production the relative importance of China's tin production declined. During the period 1941-53, it amounted to less than 4 per cent of the world total.

Most of China's tin is produced in the Ko-chiu area of Yunnan Province. In some places, modern mining methods are used, but ore dug by outdated methods still constitutes an important part of China's tin production. Before the Communists seized control of the China Mainland, a portion of the tin produced in Yunnan was processed by a local refinery before export to world markets. [1]

Under their regime, the Communists reported, annual tin production on the China Mainland increased from 4,000 metric tons in 1950 to 6,400 metric tons in 1953. The major expansion occurred in Yunnan Province. But

1. Chinese Ministry of Information, China Handbook, 1937-1945, New York, Macmillan Co., 1947, p. 394.

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316 similar increases in production were taking place elsewhere in the world. Today, China accounts for less than 3 per cent of the world's total production of tin.[2]

B. Iron and Steel Production

Most of the iron and steel produced in Southwest China comes from the province of Szechwan and, more particularly, the Chungking area. Kweichow and Yunnan have produced some iron, but the amount is insignificant in comparison with the amount originating in Szechwan.

2. See Table 1 in the chapter on Foreign Trade.

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Table 1. Iron and Steel Production in Southwest China

Year	Iron Ore		Pig Iron		Steel
	Province*	Free China#	Province*	Free China x	Free China#
1934		Unknown		Unknown	Unknown
Szechwan	60,000		20,000		
Kweichow	300		75		
Yunnan	1,500		500		
Total	61,800		20,575		
1939	Unknown	41,466	Unknown	Unknown	12,000
1940		55,182			1,500
1941		62,836			2,011
1942		77,497			3,000
1943		70,000			6,800
1944		40,134			13,361

* Chinese Yearbook, 1944-1945, p. 656.

\# Statistical Abstract of the Republic of China, 1947, pp. 28-29.

x China Handbook, 1937-1945, p. 391.

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316 1. Iron Ore. Before World War II, virtually all of the iron ore produced in the southwestern provinces came from antiquated native mines. It has been estimated that in 1934 the native mines in Szechwan produced about 60,000 metric tons of iron ore, those in Yunnan about 1,500 tons, and those in Kweichow about 300 tons.[3] The output in Szechwan Province was surpassed only by that of Shansi Province in the North China Region, where, if the production of modern mines is excluded, the greatest amount of iron ore in China is mined. During the prewar years, Central China and Manchuria were the only regions where large-scale modern iron and steel plants were in operation.

327 2. Pig Iron. In 1934, the pig iron production of Szechwan amounted to 20,000 metric tons, that of Yunnan to 500 metric tons, and that of Kweichow to 75 metric tons. During the war years, plant facilities in the southwestern provinces were modernized, and pig iron production (largely in Szechwan) rose to approximately 30,000 metric tons

3. The Council of International Affairs (Chungking), The Chinese Yearbook, 1944-1945, Shanghai, Chicago Daily Tribune Publishing Co., 1946, p. 656; Statistical Abstract of the Republic of China, 1947, Nanking, Directorate General of Budgets, Accounts and Statistics, Executive Yuan, 1948, pp. 28-29.

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327 standard and narrow gauge rails for the construction and repair of railroads in the Southwest Region.

C. Production of Coal

316 135 In terms of the coal resources of the entire country, reserves and production in Southwest China are small (See Table 3).

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Table 3. China's Coal Production
(in 1,000 metric tons)

	1934		1946	
East China	1,619	(4.7%)	1,160	(6.8%)
South China	501	(1.5)	130	(0.8)
Southwest China	863	(2.6)	2,310	(13.5)
North China	16,876	(49.4)	7,177	(41.8)
Northwest China	487	(1.5)	1,409	(8.2)
Northeast China (Manchuria)	12,000	(35.0)	4,182	(24.4)
Central China	1,828	(5.4)	790	(4.6)

* Chinese Yearbook, 1944-1945, p. 684; The Statistical Yearbook of the Republic of China, 1948; and China Handbook, 1937-1945, pp. 398-90.

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316 Szechwan Province has the largest known coal
135 reserve in the region, and Sikang the smallest. Geological data on coal reserves in Sikang are incomplete. Szechwan leads the provinces of the Southwest Region in the production of bituminous coal (See Table 4).

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Table 4. Estimated Coal Reserve in Southwest China*
(in million metric tons)

Province	Anthracite	Bituminous	Lignite	Total	Per cent of National Total
Szechwan	293	3,540	-	3,833	1.46%
Yunnan	77	1,542	694	2,313	.88
Kweichow	822	1,696	-	2,518	.96
Sikang	3	501	27	531	.20
Total - Southwest China				9,195	3.51%
- China, including Manchuria	45,281	216,021	4,012	265,314	100.00%

* Based on data published in China Handbook, 1937-1945, p. 389.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

occupied by schools and the militia. I found the houses here with gates walled-up for fear of bandits, which fortunately are now no more. It is related that the capital of Yün-nan was once at this place, but owing to the lack of water it was transferred to the present site near the K'un-yang Lake (Tien Ch'ih 滇池). An aviation ground has been laid out east of Yün-nan-i. Neither wood nor charcoal are obtainable here, only anthracite which is burnt in open braziers, the poisonous gases penetrating the street from the houses. The anthracite is mined near the village of Ma-kai 馬街, 15 li south of Yün-nan-i.

Eleventh stage. — From Yün-nan-i to Hung-ngai 紅崖 is a distance of 85 li. Elevation 6,120 feet.

From Yün-nan-i the trail leads along the plain, past a quaint pond near a temple with the houses of the long village of Kao-kuan-p'o 高關坡, opposite, then along the foot-hills for 15 li, which bring us to another small plain which the trail crosses. From about the center of this plain, called Hsiang-yün-pa 祥雲壩 (Auspicious cloud plain; in Yün-nan a *pa-tzu* 壩子 is a plain), another trail leads south-west to Meng-hua 蒙化, two stages (120 li) distant. Wheat and broad beans were cultivated on this plain. To the right, or north, is a lake of considerable size called Ch'ing-hai-yün 青海雲.[18] A rocky spur closes the plain, where is situated the small hamlet of Shai-chin-p'o 晒金坡.

The track now leads across the rocky spur to the shores of the lake. We find ourselves on another plain which we cross, thence over some foot-hills into a larger plain to the north. Passing through the forlorn hamlet of Kou-ts'un-p'u 溝村舖, elevation 6,900 feet, with its hedges of *Opuntia monacantha* cactus, we come out into grassy country, the hills being absolutely bare and lonely in the extreme, reminding one of the grasslands of north-east Tibet. To the north there is, however, a cultivated plain, while to the south are the denuded hills. Ahead red cliffs are visible, at the foot of which is a fairly imposing Buddhist temple, and next to it the hamlet of Ch'ing-hua-tung 青華洞 (Azure flowery cave), named after a large limestone cave a short way from the temple.[19] The distance from Yün-nan-i is 40 li and it is a regular lunch-stop, although a poorer place it is difficult to imagine; it consists of about four dilapidated houses or, rather, ruins. The cave, about 120 feet wide, extends some distance into the mountain, the ceiling is very high and there are several side branches. I followed the main cave for some distance but as the air became foul, and we stumbled on old coffins and human skeletons, we returned, glad to see daylight again. Two li north of Ch'ing-hua-tung is the magistracy of Yün-nan hsien, also called Hsiang-yün hsien 祥雲縣.

From Ch'ing-hua-tung the trail leads directly up the mountain and thence into a ravine surrounded by bare hills, wheat being planted in its narrow floor. Within the ravine, some distance up, the trail leads through the village of I-chiang-p'u 倚江舖, elevation 7,120 feet; the whole village is occupied with

(Ancient Yün-nan prefectural city). Nine li south of Yün-nan hsien is the village of Li-ssu-ying 力士營. Tradition relates that it was the camp (*ying*) of the army of Chu-ko Wu-hou 諸葛武侯 (Marquis Chu-ko Liang) (181–234).

[18] Also called Yeh-shing Hu 葉榆湖. In the center of the lake is a rock resembling a mirror (*ching*), — hence the name.

[19] Ch'ing-hua Shan is the name of the mountain in which the cave is situated.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

arch bridge by a small hamlet consisting of a few houses. The trail leads on the east bank of the stream along the foot of a rocky mountain slope composed of reddish-purple boulders. The vegetation consists mainly of bushes such as Corylus and Escholtzia. The mountains rise to about 2,000 feet on the west bank, and 3,000 feet on the east bank, with secondary parallel ridges. Terraced rice-fields extend along the banks, but well above the river. On the west bank is situated the village of Hsiao-ma-ch'ang 小馬廠. Here the slopes of the mountain are covered with tall forests of *Pinus yünnanensis*. One li beyond we come to a few houses which compose the village of Ta-ch'iang-pa 打槍壩, also situated on the west bank. The river winds considerably, passing through a small rocky defile, the trail following downstream on the east bank. The path becomes narrower and almost impassable due to many wash-outs and projecting boulders. About a hundred feet above the stream on the west bank is the hamlet of Ma-li-p'ing 麻梨坪.

We cross a small tributary and follow the ever-narrowing trail, which in places is really perilous, winding up and down and around hill-sides, then again through groves of oaks and *Cornus capitata* trees, pears, Rhamnus, and Berberis, until we come to the poorest village so far encountered; it is called La-p'u-wan 腊普灣 (also written 剌普灣). Soon we come to another village called Chuang-fang 庄房; here the river is very narrow and strewn with huge boulders, a wooden bridge crossing it. The hamlet is on the east bank almost at the level of the river-bed. A little over a li brings us to the Tibetan village of Wua-shi (Wa-shih 瓦石). About 30 li to the west of this place a quicksilver mine is said to exist. Red sandstone and gray grits with patches of manganese dioxide and iron oxide are to be found at Wua-shih (GREGORY).

The valley becomes considerably narrower with rather steep slopes.

Ka-ka-t'ang village.— Ten li more and we arrive at the narrow, filthy conglomeration of huts and pigsties which calls itself the village of Ka-ka-t'ang 戛戛塘. Near the entrance to the village is a spring enclosed in a square rock basin over which a tiny Lung-wang shrine had been built. Fish swam peacefully in it. The inhabitants nearly all have goitres, some of extraordinary size, almost as large as the head itself.

From Ka-ka-t'ang a trail leads east across a pass and along the valley of the Chung-ch'iu Ho 中秋河 to La-p'u. The Chung-ch'iu Ho has its source on the northern slopes of the Li-ti-p'ing and flows first parallel with the Yung-ch'un Ho and then turns straight north there it is called La-p'u Ta-ho; it bends east at La-p'u, and debouches into the Yangtze at Ch'i-tsung 其宗. The Chinese military map of Yün-nan gives its source south of Pong-tse-ra and ignores two high passes between Pen-tzu-lan 奔子蘭 and La-p'u, thus making the stream flow over the passes south, instead of from south to north. Davies' map is here also completely wrong, for the two sources of his stream, one in the Kar-ri La and the other in the Ponge La, a pass 12,150 feet in height, flow together on the map, but have no outlet. The Yon-dze-khà, which is the Tibetan name of the stream, rises in the Pai-mang Shan and flows south, but above Rong-sha (Lo-she 洛舍); it then flows east and debouches into the Yangtze.

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the village and give leprosy to his relatives; hence the custom of burying lepers alive. The burial over, all returned to their homes.

6. PAI-CHIO SILVER MINE

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The one feature of interest in Pai-chio-pa and the Lang-ch'ü T'u-ssu's domain is the silver mine in Pai-chio Shan (Pai-chio Mountain). The Yung-pei Records, ch. 1, fol. 18b, have the following to say about this mine:

"The Pai-chio Mountain is in the district of Lang-ch'ü and borders on the district of the Chang T'u-ssu [Yung-pei district]; the mountain extends part-way into Ssu-ch'uan, that is into the magistracy of Yen-yüan. On the top as well as at the foot of the mountain there are outcroppings of silver ore. In the 11th year of Tao-kuang (1831), Sub-prefect Wu Chao-t'ang 吳兆棠 submitted a report which was approved, whereupon he began operating the mine and paid taxes to the government. The mine was called Tung-sheng ch'ang 東升廠, also Pai-niu ch'ang 白牛廠. At that time they saw a white cow at that place, whereupon they obtained silver [the legend says that only as much silver as corresponds to the leg of a cow has been mined, meaning that there is a large amount still unmined], hence the name Pai-niu ch'ang (White cow mine). In the 25th year (1845) gold was found in the silver, which was separated from it. Mining is still going on to this day."

Mining operations have, however, ceased, not on account of lack of ore, but on account of the foul air in the mine, which prevents workers from remaining in it. They are unacquainted with ventilating methods.

In another part of the Yung-pei Records ch. 2, fol. 48a, it relates that after the mine had been opened they kept five to six boilers (池) or smelters going [the word *ch'ih* 池 stands for a container of liquids, but the Records do not state how much ore could be melted in one of them]. It does say, however, that out of every *ch'ih* from 50–60 Chinese ounces of silver were obtained when the ore was good, and never less than 10 ounces. After many years of mining the ore became less and less productive and in the end contained little silver.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

764 there are enormous tracts of country taken up by graves. In Yün-nan they are usually along the foot of the hills in ground which lies too high to be irrigated and cultivated.

797 On arriving at the town I went to the house of Mr Smith of the China Inland Mission, who very kindly put me up. The European population of Tali consisted of Mr and Mrs Smith and their children, two missionary ladies who lived with them, and M. Leguilcher, a French priest who had been some 40 years in the province.

361 Ta-li is built at a height of 6,900 feet near the foot of the hills which rise up to about 14,000 feet on the west, while a mile away to the east is the Ta-li lake, the official name [133] of which is Êrh Hai. This lake is a fine piece of water 30 miles long and from three to seven miles wide, bounded on the east by low, bare, reddish coloured hills. It is [505] full of fish and is navigated a good deal by small sailing boats, carrying passengers and cargo from one part of the plain to another. The origin of the name Tali I imagine to be the Shan words *ta li* meaning *good ferry*. This is only a guess on my part, but as Shans almost certainly once inhabited this plain and as there is still a ferry across the lake near the town this derivation seems probable.

The town is surrounded by the usual wall, which in this case is built of stone, and the population of the place is perhaps 30,000. The people in the town are Chinese with a good many Panthays among them, but the majority of the inhabitants of the villages belong to an aboriginal tribe who call themselves Pê-tsö, but whom the Chinese know as Ming-chia. These people retain their own language, and many of them can barely speak Chinese. Their women do not as a rule bind their feet, but in most respects they now conform to Chinese customs. They seem a quiet, peaceable, hardworking people, and in the winter some of them find their way as far as Burma in search of work.

• 316 One of the chief industries of Ta-li is the quarrying of marble in the Ts'ang Shan range. The stone is white mixed with black and various shades of grey, brown, green, yellow, and red. It is polished and worked up into representations of scenery which they say are natural, though I have heard this doubted, and it is possible that they sometimes use some stain to help the natural colours.

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These slabs are then framed and are sent all over China to be hung up on the walls of houses as ornaments. The marble is also in much request for tombstones. 316 ●

Silver bracelets and other things are also made in the town, but there is nothing remarkable about the workmanship. Gold is another somewhat important article of trade: it is usually beaten into gold leaf and sent in this form to Burma where it is in much demand for gilding pagodas. European goods come in through Bhamo, but they seemed very scarce, and were represented by a few cotton, calico, and woollen goods, needles, thread, and tinned milk. Some Tibetan products, chiefly furs and medicines, also find their way to Ta-li. Most of this is brought down in April, in which month a great annual fair is held here which attracts thousands of strangers who come in to trade from all parts of the province. 326 439

Ta-li is an important place from the official point of view. It is the residence of the T'i-t'ai, who is commander-in-chief of all the troops in Yün-nan, and of a Tao-t'ai[1], who governs a very large district including the whole of the western part of the province right up to the Burmese border.

I stayed two days in Ta-li hospitably entertained by Mr and Mrs Smith. The former was most kind in showing me all the sights of the place, which include several very fine temples. One of these on the road between Ta-li and Hsia-kuan was built in honour of Yang, the famous Chinese general who retook Ta-li from the Panthays and put an end to the rebellion. In it is an image of the great general himself, extremely well done, and the old man in charge of the temple told us it was an excellent likeness. He seems to have been a remarkable man, very short in stature but extremely energetic and not much hampered by attention to official etiquette, so much so that he would even walk about the streets, instead of being carried in a sedan chair. Military mandarins often rather affect this disregard of etiquette, and put on what they consider a bluff, soldierlike manner, talking in a loud voice and so on. Possibly many of them are not very conversant with all the points of correct Chinese deportment, as they are often men of low origin. 346 000

[1] This Tao-t'ai is now said to have his official residence in T'eng-yüeh.

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generals and admirals looking about for an excuse for their defeat, described our men-of-war as "sea devils," against whom it was impossible for mortal men to contend.

I slept at Shun-chiang, a village of 200 houses, which is perhaps the principal place in Hsi-lien. This district consists of a plain or plateau about 23 miles long running from north to south at an elevation which averages 6000 feet. The northern half runs down the Ku-tung Ho, and is from one to three miles wide. This river then turns off eastward to join the Shweli, and the southern part of Hsi-lien is a plateau with little tributaries of the Ku-tung Ho or of the Shweli, crossing it from west to east. Along these little streams are irrigated fields, so that in going up the plateau from south to north one crosses alternately small rice plains and bits of higher-lying uncultivated ground, covered with rocks and bushes.

The hills all round are fairly well clothed with forest, chiefly of fir trees. The range to the west rises to 9,500 feet, but that to the east is lower, with gaps through it by which the streams reach the Shweli[1]. The abundance of timber is shown by the fact that all the houses are built of wood instead of the usual soft brick. The district is decidedly a prosperous one and contributes to the volume of trade to be got out of T'êng-yüeh. Fruit-growing and sheep-rearing could be carried on very successfully here.

From Shun-chiang we went on by two easy marches to Ma-li-pa, a village in the small district of T'ien-t'ang-kuan which lies at the head of the Ku-tung Ho. Here we found shelter for mules as well as men in a water-tight but very draughty temple. The district is governed by an hereditary Chinese chief, and is of no importance except for its iron mine. This has been worked chiefly by surface-diggings, but in two places there are deeper shafts, the earth being propped up by logs of wood placed close together and supported by posts. One of these goes down forty or fifty feet.

The ore is smelted near the village, and the bellows of the furnace, as at Wan-yao, are worked by a water-wheel. The softer iron is used for the manufacture of pans, but

[1] Some of these streams run into holes in this range.

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327 when hardened by repeated heatings in the furnace it is made into hatchets, hoes, and tripod stands for cooking-pots.

563 To the north of T'ien-t'ang-kuan is a very interesting country inhabited by the Li-so tribe, which I should much have liked to explore. This race I have found scattered over a very wide extent of country, as far south as the Siamese border, and as far north as the Tibetan parts of Ssŭ-ch'uan and north-western Yün-nan. In the Kachin Hills and the Shan States they are split up into very small and scattered communities, living usually on the very tops of the hills. They originally occupied a good deal of the country to the west and north of T'êng-yüeh, and I have little doubt that the Chinamen of Hsi-lien and many of the neighbouring districts have more Li-so blood in them than Chinese. At present the only district in which the Li-sos form the bulk of the population seems to be the Salween valley from about Lat. 25° 30′ up to Lat. 27° 30′. Their language is closely connected with that of the Lo-los, and they are no doubt a branch of this widely-spread race. I have always found them, like the Lo-los, extremely pleasant and friendly.

Li-so is the Chinese name for this tribe. They call themselves Li-su, and the Kachins know them as Yaw-yen. In T'ien t'ang-kuan they now live on very good terms with their Chinese neighbours, but the remains of a wall round Ma-li-pa and an old two-storied stone tower close by suggest that there was a time when things were not so peaceful. Now-a-days the only enemies of the villagers are wolves, which they say hunt in large packs and will kill even big animals, such as ponies and cattle.

From Ma-li-pa I turned eastward, crossed a range at 8,700 feet by an extremely steep ascent and an equally abrupt descent, rendered more difficult by a drizzling rain. This brought us into the Ming-kuang plain which runs down the Mo-lo Ho in a valley half a mile wide.

328 [316] We slept at the village of Hsiao-hsin-kai, and I found men smelting lead close by. The lead is found in sand and this sand is first washed in a place prepared for the purpose in a small stream. The heaviest part of it which sinks is then taken away and smelted in the furnace. Both lead and

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ing for a railway with the sanction of the Chinese Government.

Passing Sung-lin, a village of two hundred houses with a mud wall round it, we took two days to reach Pan-ch'iao at the southern end of the Hsüan-wei plain. The country is undulating, and one passes through a series of little cultivated plateaus, with low rocky hills rising out of them, and most of them without any running water. This part of Yün-nan is full of coal and hardly anything else is used as fuel. It is sold for 200 cash a cartload, which I calculate to be at about the rate of three shillings a ton.

On the 14th April I reached Hsüan-wei Chou, and found Watts-Jones there, established in a temple just inside the south gate. Here we were in telegraphic communication with the world again. Pottinger had arrived at Pi-chieh and hoped to meet us at Wei-ning Chou. We were very sorry to learn that Mr Tucker, who formed one of Pottinger's party, had returned to Ch'ung-k'ing suffering from pleurisy, and had died there of heart failure.

Hsüan-wei is a town of 800 houses and has two walls round it, one inside the other. The plain in which it stands is a poor one, but the whole country round is full of coal mines which, with better means of communication, might be extensively worked. Hsüan-wei is famous for its hams, which are excellent. Chinese hams vary very much. The best ones are very good, and this is the only form in which I ever ate pig in China.

After halting a day at Hsüan-wei, we left again on the 16th April, and soon found ourselves in a more hilly country. In these parts the Chinese are in the habit of shouting out *yang kuei-tzŭ*, "foreign devil," an expression one does not hear very often in most parts of Yün-nan. In Hsüan-wei we had heard the little boys shouting it out as we walked about the town, but they took care to keep at a distance, and the Chinamen nearest us always wore a look of almost too complete innocence.

However our time for retaliation soon arrived. The day we left Hsüan-wei, Watts-Jones and I had walked on a little ahead and passed five or six Chinamen sitting by the roadside. Directly we had passed, we heard shouts of "yang kuei-tzŭ." We turned back at once and our

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186 friends instantly dispersed in different directions. However one of them was a slow mover, and we soon caught him and gave him a good thrashing. This, however, turned out not to be the man who had actually shouted, though I have no doubt his licking did him a lot of good. So we set to work to search for the real culprit, and soon found him hiding in a wet nullah. After a short interview, we left him begging for mercy, covered with mud and water, with a bleeding nose and various bruises all over him, so perhaps he will be more civil in the future.

This expression, *yang kuei-tzŭ*, has come to be the usual name for a European among the Chinese, and I have heard it used by ignorant countrymen in out-of-the-way places, evidently without realising that there was anything insulting in it; but when shouted out in this way as one passes, it can only be meant as an insult, which it is one's duty to resent.

361 On the second day out from Hsüan-wei we passed through the large village of T'ang-t'ang, lying in a narrow valley shut in by steep hills. This is the headquarters of the lessee of the copper mines in this neighbourhood. [316] They get copper in many places near here, but they say the mines do not produce as much as they used to. We slept at Hsin-t'ien-p'u, at 7,250 feet. In the afternoon there was a heavy thunderstorm, which left a little patch of snow on one of the ranges.

On the 18th April after a long ascent we went downhill, very steeply, to the K'o-tu Ho, a river 20 yards wide, running with a rapid current over a rocky bed. In the dry season it is fordable, but later on in the year, when the rains are heavy, it gets very deep and is crossed by a ferry-boat, fastened to a wire rope which is stretched across the stream.

131 This river forms the longest source of the West River of Canton. It here marks the boundary between the provinces of Yün-nan and Kuei-chou[1], so that at Chan-p'o, 312 where we slept, we were in the latter province. The hills of this part of the country are very dry, and the villagers

[1] To be exactly accurate, there is a narrow strip of land on the left bank of the river which belongs to Yün-nan.

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here asked us to show them where to dig for water. The Chinese often credited us with the power of seeing what is under the earth. I suppose the idea is derived from embroidered narratives of the exploits of mining engineers.

The next march, over a dry, hilly country, brought us to Yao-chan, where we halted for a day as Watts-Jones had to go up a hill to the east to get a better idea of the lie of the country. I took the opportunity to go up another hill to the west to do some surveying, and to visit a copper mine about two miles off.

This mine, they say, was formerly very productive and 2000 men are said to have found employment here. At the time of my visit there were not more than 100 miners at work. They live in little huts scattered about the valley, and there are three furnaces constantly kept burning to smelt the ore they dig out. The ore is mined out of the solid rock of which the hill is formed. There are no deep shafts: they cut caves out of the hillside, and the miners often live in the caves they are working in. They use hammers and iron wedges, and they say a man can get out a mule load of ore in two days. The ore varies a good deal in quality, and is sold for from two to seven mace a mule load. Taking a load as 130 lbs., this comes to from sixpence to one and ninepence for 100 lbs. The best ore is of a purple colour and is said to produce 10 per cent. of copper.

The lessee of the mine pays 500 or 600 taels a year to the Government for the right of smelting, and the miners are obliged to sell the ore to the lessee. The copper produced is sent to Kuei-yang Fu, the capital of Kuei-chou province, and is there used for coining into cash.

The hill-tops in this part of the country rise to about 8000 feet, and they all had snow on them, which, combined with a biting north wind, made this one of the coldest days I have ever felt in western China.

On the 21st April we crossed a range, and skirting the edge of a large lake reached Wei-ning Chou, which is built on its further shore. The walls enclose a large space, but it is chiefly filled with temples, including a very large red Confucian temple. There are not more than 600 houses in the place, half within the walls and half without.

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361 438 It is a very poor town with really nothing to call a plain, and all the rice has to be imported from Chao-t'ung Fu and elsewhere. Maize and beans are the principal food of the inhabitants. There are no large merchants here and very little trade is done except in the necessaries of life. Cotton cloth and any foreign goods that there are come from the Yangtze, and salt also comes from Ssŭ-ch'uan.

• 316 The only importance of the Wei-ning district lies in the mines—copper, silver, lead, iron, and zinc. With good communications these could no doubt be profitably worked. The height of Wei-ning is 7,500 feet, and it is a very cold place.

132 As Pottinger had not yet arrived I went on the next day along the Pi-chieh road, while Watts-Jones did some more surveying to the east of Wei-ning.

Going gradually up a range of hills, my road led me over a series of small steep-sided plateaus, with no outlet for the water. I slept at Ssŭ-p'u at 8000 feet. For the last few miles of this march we were in a dense cloud, so that it was impossible to do any surveying beyond a mere traverse of the road. This is the sort of weather which is, I believe, prevalent throughout Ssŭ-ch'uan in the cold season. The name Yün-nan means "south of the cloud," and it is natural to suppose that the province was so named as lying south of the clouds and mist which prevail in Ssŭ-ch'uan, and even in north-eastern Yün-nan, for such a great part of the year.

On the 23rd April I met Pottinger at the little village of Hun-shui-t'ang. Hunter, who was doing the surveying, was still 30 miles behind, as he had found great difficulties in this part of the line. So we decided to go to Wei-ning and await his arrival there.

The misty and rainy weather had made surveying most difficult for Pottinger's party. They had sometimes been for days together enveloped in thick fog, which made it absolutely impossible to see the lie of the country or to do any useful work.

579 186 Besides this they had encountered much hostility from the natives of the country. A hundred men or so would collect and roll down stones on them from the hill-tops

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328 the cup near the top. The zinc is sold at about 1½*d.* for 1 lb., and is most of it sent to Yün-nan Fu to be mixed with copper to make cash.

After crossing the river we had a very steep climb of more than 3000 feet, reaching the top of the range at 8,600 feet and descending slightly to Kung-shan, a large mining village. The mine manager was a travelled man who had visited Shanghai, and I found him very civil.

316 Lead and zinc are the two chief minerals, and the lead ore also produces a small quantity of silver. I was told that the output of lead averages 400 lbs. in a day. The zinc is got out of very deep shafts, extending they say several *li*[1] into the hill-side. I did not test the exact accuracy of this statement, but I went a little way down one shaft and it certainly seemed to be a deep one. They are not sunk straight down but are sloped so that a man can walk down them, though the passage is so low that he has to keep in a bent position most of the way.

On the 1st May our road led us down a narrow valley to the Chê-hai plain, which is about seven miles long and contains a small lake and several villages. The next day after crossing a low range we reached Tung-ch'uan Fu where I was kindly put up by Mr and Mrs Grist and Dr Hicks,
288 the missionaries there. The official then at Tung-ch'uan was a very enterprising man who had established a manufactory of cotton cloth. The yarn is from Bombay, imported by Shanghai and the Yangtze. There was no European machinery: they used the ordinary Chinese looms.

361 The town walls of Tung-ch'uan do not enclose much space, but there are a good many people living outside the gates, and the whole town and suburbs must contain about 1000 houses. The population appear to be very friendly to foreigners.

241 The plain is some six miles long by three miles wide. It grows rice well, but the winter crops do not seem to
000 flourish, and the soil does not suit opium. Like Wei-ning

[1] The *li* is a Chinese measure of distance. Theoretically it is about 600 yds. but practically it varies in different parts of the country. In the hilly parts of Yün-nan it runs about five to the mile. Ten li may be usually taken as an hour's march, so that used in this way as a unit of time it is a very useful measure.

316 Like Wei-ning
the chief importance of Tung-ch'uan lies in its mines. I had not time to visit any of these, except those at Kung-shan, but there are several productive copper mines in the district.

132 The height of the town I made 7,250 feet. It is a cold place, with a climate more cloudy and rainy than the parts of Yün-nan lying further to the south or west of it.

000 My route from here on to Yün-nan Fu took me along the main road which connects the Yangtze at Sui Fu with the capital of Yün-nan. I was here again out of unexplored country, as Doudart de Lagrée, Baber and others, not to mention many missionaries, had travelled the road before me. I still kept up the survey as no very satisfactory maps had been made of this country.

Turning off from the Tung-ch'uan plain near its western end, our road led us up the Yi-li Ho by a narrow valley
505 with hills rising to 9000 feet on either side. This river is 30 or 40 yards wide and is fordable in many places, but is deep enough to be navigated by boats which bring down timber and firewood to supply Tung-ch'uan.

000 Up this valley we marched for two days and then ascended very steeply on to a ridge and along it, the highest point reached being 9,300 feet. To the north-west a long distance off two very high peaks were visible which I estimated at 14,000 feet. We had now got on to a bare plateau country with considerable stretches of flat ground and small hills rising 300 to 500 feet out of it. We slept on the 5th May in the large temple of the village of Lai-t'ou-p'o at 8,500 feet.

241 The next day we continued our march over the same plateau country. Villages are scarce here, and there is very little cultivation owing to lack of water. At the end of this march of 18 miles the road descends to Hsiao-lung-t'an which is near a small tributary of the Yangtze.

On the 7th after descending to Kung-shan, our road led us up a narrow cultivated valley, ending with a slight ascent
137 to Liu-shu-ho. The country here is more wooded: the hills are covered with firs, and I pitched my tent in a grove of chestnut trees.

407 I saw a curious rice husking machine here. It consisted of a wheel in an upright position which wheeled round and

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CHAPTER XXIII

YÜN-NAN FU TO THE RED RIVER.

Beginning of the rainy season—Ch'êng-kung Hsien—Chin-ning Chou—A lake country—Picturesque village—The T'ung-hai plain—Separate from Turner and Ker—Their subsequent travels in the rains—Impassable roads—The Chinese francolin—The Ch'ü Chiang valley—The Lin-an plain—An open plateau country—Mêng-tzŭ—Its European population—Attack on the foreign settlement—The trade of Mêng-tzŭ—Devil's punch-bowls—No inns—An unhealthy village—The Red River at Man-hao—Down the rapids by boat—A French fort—The French frontier.

FROM Yün-nan Fu I was to return to England *viâ* Tong-king to report on the results of our expedition, while Mr Turner and Mr Ker were to make their way back to Burma. As however they wished to visit a gold mine at T'a-lang T'ing, north-east of P'u-êrh, we all left Yün-nan Fu together.

We started on the 15th May in pouring rain, which made things most unpleasant, for in Yün-nan, as in Burma, the rainy season begins in the latter half of May. After an easy march down the plain which borders the K'un-yang Lake on its eastern side we reached the little town of Ch'êng-kung Hsien.

Continuing our march the next day down the same plain we passed through Chin-ning Chou, a walled town of 700 houses, whose narrow street was densely packed with people, as we happened to strike it on a market day. We went on another six miles and slept at Hua-lo-ts'un, villages being as a rule pleasanter places to pass the night in than towns.

From here we left the basin of the K'un-yang Lake and crossed a range at a low gap, descending to another large lake called Ch'êng-chiang Hai. The road leaves this on its left and, passing through the little town of Chiang-ch'uan, reaches Hai-mên-ch'iao. This village is picturesquely placed

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000 between the little Chiang-ch'uan Lake and the hills to the east of it, just at the point where a stream connecting it with the Ch'êng-chiang Hai forces its way through these hills.

The village has some nice trees and looks well from a distance: inside are the usual pigs and dirt. Its height is just under 6000 feet, the first time for six weeks I had camped at such a low elevation.

On the 18th, crossing a low range of hills, we descended to the lake of T'ung Hai, and, rounding its eastern end, 241 reached the town of that name. The plain round the lake 373 is well cultivated and there is a ring of large villages round it. The town though not very big is decidedly prosperous and has a good deal of trade. We found kerosine oil in general use here for lamps, a sign that we were approaching the civilisation of Tong-king.

From here Turner and I separated, his road branching off in a more westerly direction. Ker had left us two days previously to find a way from Chin-ning to T'a-lang, thus getting more country surveyed than we otherwise should have done.

• 316 Turner and Ker met at T'a-lang and were able to visit the gold mine, which they found a productive one in spite of the very crude machinery used. After this they had a most trying journey over roads rendered nearly impassable by heavy rains. They followed up the course of the Pa-pien Chiang (Black River) for several days, turning westward from near the south end of the Ching-tung T'ing plain. Ker crossed the Mekong to Yün Chou, and from there went northward to Ta-li Fu, where he met Turner, who had come there by a more direct route. They did not reach Burma till August. Travelling in Yün-nan in the rains is not a pleasant experience. It was quite an exceptional circumstance for them not to be wet to the skin on every march, and their rate of progress was sometimes not more than a mile an hour.

136 It had rained almost unceasingly since we left Yün-nan Fu, so it was pleasant to start the next morning in fine weather, with the cheerful call of the Chinese francolin all round us. This bird closely resembles the painted partridge of southern India, and is the common partridge of Burma

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much the same size as the Pa-pien Chiang. The elevation of this river here is only 2,600 feet, and it is spanned by another chain bridge in the same shaky condition as that we had crossed two days before.

Sleeping at Chang-lu-p'ing we had a climb of 2,600 feet the next morning, and then a descent to the little narrow plain in which T'a-lang T'ing is built. The town appears to contain 500 houses or so, and has I think better shops than P'u-êrh. Its principal importance is derived from its gold mine, which lies some miles off the town. I did not visit it, as it had been examined in the previous year by Turner and Ker.

The villagers in this plain belong chiefly to the Wo-ni race, who are divided into three tribes, the K'a-tu, Pu-tu, and Pi-o. These all speak Lo-lo dialects closely allied to each other, but they have not the straight features and fine physique which are characteristic of the genuine Lo-lo. M. Bons d'Anty, of the French Consular Service, who is an authority on Lo-los, considers these tribes to be the original owners of the soil and to have been conquered by the Lo-los, who have imposed their own language upon them. If this is so, it seems probable that they belonged originally to the Mon-Annam race, and are connected with the P'u-mans and the Las and Was.

We met many Pu-tu and Pi-o families returning from the town. The dress of their women is picturesque. The dark coat reaching nearly to the knees is open in front, with a separate piece of cloth fastened across the breasts. In the arrangement of this piece of cloth lies a distinction between two of the tribes, for in the case of the Pu-tu it is buttoned on to the coat, while among the Pi-o it is simply fastened round inside the coat. The skirt of both tribes consists of one piece of stuff put on round the waist and just tucked in to fasten it. The turban has a long piece of spare cloth which is thrown back from the front over the top of the head. Their ornaments are large silver earrings. The colour of their coats and waistcloths forms another distinguishing tribal mark, for those of the Pi-o women are often white, those of the Pu-tu always dark blue. The young unmarried girls of both tribes wear blue caps instead of turbans, and their hair is cut to a length

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000 streets and crowded the house-tops to get a look at us. Work must have been entirely at a standstill for that afternoon. The crowd was however a very civil and friendly one. On arriving at the inn I found the enterprising landlord had arranged some reserved seats for his family and friends, so that they might watch whatever I did in my room. This was a little too much, and I was obliged to intimate that the performance was finished for the day.

361 The town of Hsin-p'ing is in two parts, one surrounded by a stone wall, the other by a mud wall. The officials 563 live in the former, but all the shops are in the latter. The people are chiefly Chinese, but there are a few Lo-los in almost every village and even in the town. Doubtless it was a Lo-lo country originally, and many of the Chinese are of Lo-lo descent.

241 The plain is most of it on a slope and somewhat cut up by stony, uncultivated ground, but it appears to grow fairly good crops. Its height is over 5000 feet, and it is cool enough to grow opium and warm enough to grow sugar-cane, two crops that I have never elsewhere seen side by side. I bought here the best oranges that I have ever tasted in any country.

312 Our next three days' march lay through a poor country, without much water in it that can be used for irrigation. •316 The streams are most of them little trickles over a bed of solid rock, with occasional muddy pools. On the third day we reached Ssŭ-ch'éng, a village at 6000 feet, which has the remains of a mud wall round it. On this last march we passed a small iron mine at a place called Chia-tso. It is only worked on quite a small scale and does not appear to be very productive. Most of the ore is smelted near the mine, where they have enough to keep one small furnace going.

361 From Ssŭ-ch'éng, crossing two more ranges, we arrived at Yi-mén-Hsien on the 17th January. It is a very small place, the town walls built round a little hill which stands out in the middle of the plain. But inside the walls are only about 50 houses, two large temples, and the mandarin's yamen. Nearly all the population live in a suburb to the south of the real town. The plain is five miles long and is well cultivated.

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000 the stream. Below the plateau it disappears into deep gorges among the hills bordering the Yangtze.

361 On the 14th February we reached Hui-li, a town of 3000 houses with a good wall round it. It has broad streets and is more prosperous looking than any of the towns of Yün-nan, except perhaps the capital of that province. Its chief products are opium, tobacco, indigo, and copper. The copper mine is at Lu-ch'ang, six miles south of the town, and as Mr Ker had seen it the previous year I did not visit it. Indigo is to be seen growing everywhere in the fields, covered over at this time of the year with straw to preserve it from the frost. The large tanks in which they mix the dye are found in nearly every village as well as in the town. The height of Hui-li I made 6,250 feet.

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CHAPTER XXIX

UP THE CHIEN-CH'ANG VALLEY.

Leave Hui-li Chou—The Yi-mên coal mine—Insect trees—Pai-kuo-wan—Mo-so-ying—The An-ning River—Mule falls off a bridge—A pleasant inn—Good view of a tiger—The Chien-ch'ang valley—Père Bourgain—The missionaries and the Chinese of Chien-ch'ang—French missionaries—French and English missionaries compared—Their methods of working—Their relations with officials—Ready help of both sects to travellers—Ning-yüan Fu—A Lo-lo army—"Stupid men not afraid of dying"—The T'ung-an-chou "Army Act"—Li-chou—Lu-ku—The Chien-ch'ang valley—Its crops, trade, and population—Theft at an inn—The Lo-lo country—Chinese forts—"Army regulations"—Têng-hsiang-ying—The Hsiao-hsiang-ling pass—Meet Ker and Hare at Yüeh-hsi T'ing—Impracticability of railway from Chia-ting Fu.

ALTHOUGH I was quite satisfied that a railway could not cross the Yangtze in this direction, I still had to keep my appointment to meet Mr Ker at Yüeh-hsi T'ing, and my journey through the Chien-ch'ang valley I felt would be by no means wasted. In fact no exploration of Yün-nan would be complete without a visit to this valley which though belonging to Ssŭ-ch'uan, runs right down into the former province.

Leaving Hui-li on the 15th February we followed up the plain by a gradually narrowing valley and crossed a pass to Yi-mên[1] which is a village of importance owing to its coal mine. We met quantities of mules, donkeys, and coolies carrying this coal towards Hui-li in the form of coke. All the smelting at the copper mines is done with this fuel. Another noticeable feature of this district is the "insect trees" on which are reared the white wax insect[2].

From Yi-mên we crossed another steep spur and slept at Pai-kuo-wan, a village which stands at a little under 7000 feet, and is nearly twenty miles from Hui-li.

[1] Not to be confused with Yi-mên Hsien (p. 206).

[2] See p. 169.

[p. 215]

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Mien-ning Hsien, there are three flourishing towns Lu-ku, Li-chou, and Tê-ch'ang, and a large number of big villages, many of which must contain some hundreds of houses.

The whole of the plain[1] is fairly well cultivated. In the extreme northern part round Mien-ning there is not much rice grown, and wheat, maize, and opium are the principal crops. But through the greater part of the valley there is plenty of rice cultivation, while wheat, beans, and opium are grown as winter crops. The white wax insect tree and the mulberry as food for silkworms are also cultivated. Copper and iron are mined in the hills, and probably much more mining could be done if the Lo-lo country to the east of the valley were more settled. Coal is found in the hills east of Ch'i-lung, a large village a few miles north of Li-chou.

I met nothing in the way of trading caravans except some native-made cotton cloth from Ya-chou Fu, carried in the Ssŭ-ch'uan fashion by men on foot, for mule or pony transport is but little used in this province. It is with this Chinese-woven stuff that the inhabitants of the valley are chiefly clothed. They find it cheaper, warmer, and more durable than the more finely woven products of England or India. No doubt much more trade passes along this road in April when the crops of white wax insects and opium are being gathered.

The whole population of the Chien-ch'ang Valley I estimate at 150,000. Though there are plains in Yün-nan which, both in riches and in density of population, would, in *proportion to their size*, compare favourably with this valley, yet there is certainly nowhere in Yün-nan such a large extent of well-populated country all in one plain.

At Lu-ku an unpleasant incident occurred. Lachman Jadu, the surveyor, had a lot of his things stolen out of his room in the inn. On a journey of this sort no one has any superfluous kit and the loss of almost any article is serious. By Chinese custom the innkeeper is responsible for any theft that takes place in his house, and accordingly I took him with me the next day and handed him over to the nearest official, the *Hsün-chien* at Mien-shan. As far as I know the thief was never caught.

Following up the eastern source of the An-ning Ho

[1] [Chien-ch'ang valley -- Analyst]

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in the Naga hills on the Assam borde. indulge in the same sort of call.

Hsi-fan in Chinese simply means "Western Barbarian," and is certainly a vague designation, but at the same time it is a useful general name for a family of tribes who form a sort of connecting link between the Tibetans and the Lo-los. In manners and customs they are most of them Tibetan, though not all the Hsi-fans have adopted the religion of the lamas. The language of some of the tribes is almost a dialect of Tibetan, but among others the speech is more closely connected with Lo-lo.

The next day we struck the Ya-lung River, after five miles of marching, and turned down its left bank by a very rough hillside path. One of my mules in a bad piece of steep narrow ascent lost his balance, fell over the hillside, and coming with all his weight on a sharp rock was killed on the spot.

The river here is about 100 yards wide, and as its height is not much more than 5000 feet and it is shut in by very steep hills, we found the valley rather warm. As usual, in China, there is much confusion about the name of this river. Locally it is called the Chin Chiang and in fact is considered the main branch of the Yangtze, the latter being known as the Pai-shui Chiang above the confluence of the two rivers. I have never heard any Chinaman call it the Ya-lung Chiang, but it is so named on the Chinese map of Ssŭ-ch'uan and also on the small district map I saw at Mien-ning. Mr Rockhill says this is a corruption of Nya-lung, the Tibetan name. For geographical purposes it will be better to stick to the name of Ya-lung River by which it has become generally known to Europeans. The Chinese name Chin Chiang or Gold River is not inappropriate, for I saw men washing for gold in the river bed, and they said they got a fair quantity.

Crossing by ferry we had a very steep climb up to Lu-ning-ying, a village of 150 houses, on a well cultivated, steeply sloping terrace.

We did not get in till dark, so I had a day's halt here to rest the mules and to get information about our future route. Mi-li was the place to which I wanted to find a road, but no one in Lu-ning-ying had ever heard of Mi-li. At

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CHAPTER XXXIX

LI-T'ANG TO YA-CHOU FU *VIÁ* TA-CHIEN-LU.

Ho-ch'u-k'a—Gold washing—Hard frost in June—Hsi-ngo-lo—Cultivation again—Yak-loads of gunpowder for Lhasa—A stag's head—The Ya-lung at Ho-k'ou—A more Chinese country—Tung-ngo-lo—Mr Amundsen—Sell our mules—A level road—Green country—Ta-chien-lu—Its inhabitants—Missionaries English and French—Trade of Ta-chien-lu—Tea trade—Mr de Rosthorn's pamphlet—Enormous weights carried by coolies—Down the T'ung River—A short cut from Lu-ting-ch'iao—Well cultivated country—Ya-chou Fu—Mr Upcraft—End of our land journey.

000 On the 11th of June we left Li-t'ang and crossing the watershed between the Li-t'ang River and the Ya-lung by an easy pass we reached Ho-ch'u-k'a. The population of this village consists of 20 Chinese soldiers, who were very civil, as Chinamen always are in Tibet.

316 The last part of our march followed down a stream in which there was a lot of gold-washing going on. They build a wall or embankment so as to partially divert the course of the stream, and then dig up the sand in the part of the bed thus left dry. The sand is then washed on the system usually employed in western China. They pour the sand and water down a slanting wooden shoot, at the lower edge of which is a slight ledge sticking up. The sand containing the gold being heavier than the rest sinks in its passage down the shoot and gets caught by the ledge.

000 There was a hard frost the next morning, the 12th June, and even small streams of running water were frozen over. We crossed two spurs both well over 15,000 feet and descended to Tsa-ma-lu-t'ung[1], a Chinese post of three houses beautifully situated in a narrow valley with steep forest-clad hills rising up from it on each side.

[1] Tsa-ma-ra-dong in Tibetan (*Rockhill*).

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Sheep and goats are found in places all over the province, and in some districts in very large herds. The wool is sometimes made into felt rugs, but the Chinese do not know how to weave it into clothes. There is no reason why wool should not become an article of trade if better communications should make it saleable. Sheep are not sufficiently widely distributed to make mutton a common article of food anywhere.

Pork is the staple meat of Yün-nan, as of the rest of China, and pigs are kept everywhere both in towns and villages. It is a very poor man who cannot afford to mix some pork with his meal of rice. These two articles, with beans and cabbage, form the principal food of the Yünnanese.

As to the amount of livestock in the province I will not attempt to make any estimate. But as mules and ponies form nearly the only means of transport, buffaloes and cattle the only means of ploughing, and pigs the universal food of all classes, the numbers must be considerable. Moreover I do not think that the animals kept amount only to what is absolutely necessary for their owner. Many villagers own large flocks and herds, and the Yünnanese peasant is usually well off as far as possessions go, though he is not rich in money. The poverty of the poorer classes of the over-populated province of Ssŭ-ch'uan is almost unknown in Yün-nan.

We now come to mineral products. It is safe to say that there is no district in the province that does not contain mines, and with better communications Yün-nan might become one of the principal metal-producing countries of the world.

The most important mineral is *copper*, not only because copper mines are very numerous throughout the province, but because the *ch'ien* or cash, the only coin originally used by the Chinese, is made chiefly of this metal. The mines of Yün-nan supply a very large proportion of the copper used for coining, and as the value of the cash is about 400 to a shilling, and it is used throughout China, the demand for copper for this purpose alone is a very large one.

In the districts of Tung-ch'uan Fu and Chao-t'ung Fu are the mines which are at present most productive, but

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135 copper mines are also worked in Yung-ch'ang Fu, Ta-li
310 Fu, Ch'u-hsiung Fu, Ching-tung T'ing, Li-chiang Fu, Yung-pei T'ing, Wu-ting Chou, Ch'êng-chiang Fu and other districts.

Two copper-mining districts outside Yün-nan also deserve mention here, as they both lie within reach of the proposed railway. One of these is Wei-ning Chou in Kuei-chou province, a town through which the reconnoitred route actually passes. The other is Hui-li Chou, in the part of Ssŭ-ch'uan which runs down into Yün-nan to the north of the capital of the province.

Equally important with copper from a Chinese point of view is *silver*, for though the copper cash is the universal coin, lumps of silver weighed out in taels form in many parts of China the chief means of payment for larger sums than can be conveniently paid in cash.

This metal is if anything more abundant than copper, and one can seldom travel far in Yün-nan without seeing or hearing of silver mines. I doubt if there is any large district in the province which does not produce silver. Many of these mines are well worked, and Yün-nan supplies much of the silver used in other parts of China.

Iron is one of the commonest metals found in Yün-nan, and the tools and other things made from local iron are of good quality.

Lead is also a common metal, and *zinc* is mined in many places. Both these are used for mixing with copper to make cash.

Gold is not so widely distributed as the other minerals. The most productive mine is near T'a-lang T'ing (lat. 23° 25′, long. 101° 40′); this pays well in spite of the very primitive means employed for extracting the metal. Washing for gold is carried on in many parts of the Upper Yangtze and its tributaries.

The principal *tin* mine is in the south of the province at Ko-chiu, to the west of Mêng-tzŭ, but tin is also found in the Tung-ch'uan Fu district and probably in other places.

[262] Among other products may be mentioned *gypsum*, which is used by the Chinese to mix with beans to make a sort of bean curd which is a common article of food; and

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sulphur and *alum*, both of which are extracted from hot springs which occur all over the province.

Salt also must not be forgotten. There are salt wells in many parts of Yün-nan, and the province supplies itself except the north-east corner which obtains its salt from Ssŭ-ch'uan. The working of the wells is a Government monopoly, so salt at present is not allowed to be imported from abroad[1].

Not least among the products of Yün-nan must be mentioned *marble*. From the quarries at Ta-li Fu is obtained a marble which is much used for tombstones and for ornamental work in houses. It is famous all over China, and with better means of transporting it to distant places the output would doubtless largely increase.

We now come to *coal*, the most important of all the products of the earth of Yün-nan, for on cheap fuel must largely depend the success of the mines. It is found in a great many places in the province, but varies much in quality. Some of it is very powdery and can only be used in the form of briquettes: in other places it is of good quality and can be obtained in large blocks. Even when the coal now in use is of inferior quality it does not follow that a better sort would not be found by mining deeper, for at present it is obtained principally from surface workings.

Coal is found in the neighbourhood of Ta-li Fu, and in several places between this town and Yün-nan Fu. Eastward from the capital it becomes still more abundant, and is found nearly all along the proposed railway line from here to the Yangtze. In the Hsüan-wei Chou district coal is almost the only kind of fuel that is used. Nor is it only near the line of the proposed railway that coal exists. It is mined in many places on the upper course of the Yangtze, and in several other districts of Yün-nan.

Of metals and of coal in Yün-nan it may be said that no examination of the mines has at present been made in a very detailed manner. If the railway is to be constructed it will be most essential that all mining districts anywhere within reach should be carefully examined, and a report made by experts as to the prospects of working them by machinery.

[1] For more details about the salt wells see p. 197.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

Opium is produced in Yün-nan far beyond the requirements of the province, and is largely exported into other parts of China[1]. The opium of Yün-nan is considered by the Chinese to be of very fine quality, though not quite up to the standard of Indian opium. 249

Hemp, which at present is not much cultivated, might easily be extensively grown and exported for rope making. Many kinds of *fruit*, which will not grow in the tropical climate of Burma, thrive in Yün-nan, and even now form a fairly important export. These are apples, pears, quinces, peaches, apricots, cherries, persimmons (dried like figs), chestnuts, and walnuts. Yün-nan *tea* is famous all over China. There is not likely to be much trade in this commodity to Burma, but a railway through to Ssŭ-ch'uan should carry considerable quantities. *Livestock* already forms one of the principal exports from Yün-nan into Burma. Mules, ponies, cattle, and buffaloes are all far cheaper in China than in Burma, so that they can be sold at a profit in the latter country. Sheep are cheap in China, and do not thrive in the warm climate of Burma. At present slaughter-sheep are imported into Burma from India. 245 439 231 439

There are in Yün-nan large grazing grounds which are lying idle because there is not sufficient demand for live-stock. If the farmers had a ready means of disposing of their surplus animals, the flocks and herds of the province would doubtless largely increase. Moreover the trade which now exists in *horns* and *hides* would grow at the same time, and *wool* might become a most important article of export. 237 439

Among minor exports in which a considerable trade might spring up may be mentioned *pigs' bristles*, *ducks' feathers*, and the *white of eggs* for albumen; also from the Tibetan part of Yün-nan *furs* and *musk*.

As to minerals, *gold* has always been an article of export, chiefly in the form of gold-leaf to gild the Burmese pagodas. Whether *other metals* could be profitably brought into Burma or India is a question that cannot be decided till the mines have been more thoroughly examined, but 316 439

[1] This was written before the recent restrictions on opium-growing. See footnote on p. 311.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

doubtless with mining operations developed by a railway there would be large exports to other provinces of China. At present there is an export trade of copper, zinc, and lead from Yün-nan to the Yangtze.

Imports. To come now to *imports.* Of these cotton is by far the most important. The whole population of Yün-nan is clothed in cotton clothes, and yet practically no cotton is grown in the province. The whole clothing of this part of China has therefore to be imported. It is brought in as raw cotton, as cotton yarn, and as cotton cloth; but the greater part of it comes as yarn and is woven into cloth in the province. Raw cotton will however always be a necessity, as in winter the Chinese wear wadded coats for warmth. The imported cotton cloth is usually too dear for the poorer classes, but is worn a great deal by those better off.

At present the chief weaving centre is at Hsin-hsing Chou (lat. 24° 20′, long. 102° 35′), and this has become firmly established owing to the treaty port at Mêng-tzŭ (Meng-tsz') having been opened before T'êng-yüeh (Momien). Weaving is, however, carried on at other places as well, and factories would spring up wherever a railway brought cotton yarn in cheaply.

In Ssŭ-ch'uan there is also a large population—estimated as at least 45,000,000—who are also almost entirely dependent for their cotton on outside sources. But with the probability of this province being connected by rail with Hankow in the near future, it is doubtful whether much of this traffic would be secured by the Yün-nan railway.

Woollen clothes are at present almost unknown at Yün-nan. It is doubtful perhaps if fashion would ever allow woollen coats to be worn in public instead of the universal wadded cotton garments. But this would probably not apply to sleeping in woollen blankets and wearing woollen underclothes.

Leather is an article that is not well made in China, and imported leather should find a sale. *Firewood* is scarce and dear in most parts of Yün-nan and Ssŭ-ch'uan. In Burma there is an almost inexhaustible supply at a quarter the price. This may become an important article of trade, and *timber* should also be an import.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

the Szechuan-Yunnan highway will relieve to a considerable degree the traditional difficulty of transporting the wax insects for the white-wax tree industry. 314

In both mining and manufacturing, rapid progress has also been made. During the past few years, the Basin's coal production has been increased 400 per cent, iron production 300 per cent, and placer mining 200 per cent. Besides, the Basin is rapidly developing into a new industrial center of free China. It is now the home of over 61 per cent of free China's machine industry. At present the Basin accounts for about 40 per cent of the total manufacturing capacity of all free China. 316 178

Even in the most chronic and difficult problem of transportation land use, rapid progress is being made. Numerous commercial air lines have been inaugurated since 1932, many railways (some of them already under construction) have been projected; and the highway network of the Basin has been partly completed. Of the Basin's 136 districts, 85 districts, or 62 per cent, now have highway connections. Most important of all, the various projects for canalization of the numerous streams in the Basin have been vigorously advanced. Many of these projects (such as the Chi and Upper Chialing rivers) have already been completed. These achievements and many more to follow will make a long stride toward the satisfactory solution of the Basin's acute transportation problem. 489

As to the future development of the Basin, one may approach the problem from two standpoints: first, the future prospect of the Basin as a base of operation against the Japanese invasion; and second, the future position of the Basin when peace returns once more. 133

As regards the first objective, the future of the Basin is bright. First of all, here, in Szechuan Basin, one finds a unique geographic region which has the interesting and fortunate combination of a mild south-China climate (with a long growing season), a rich north-China mineral resource (particularly coal and iron), a Yangtse Delta agricultural wealth, and above all, a southwest-China rugged mountain topography which provides protection against military invasion. The agricultural richness of the Basin is particularly important in maintaining a sustained self-sufficiency and should enable the region to hold longer against invading forces than would otherwise be possible. 241

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much from their crops as otherwise they might have realized. The classical example is that of wheat during the world war I, when wheat was in great demand throughout the world at that time and was sold for 2.50 to 3.00 Yuan[1] per bushel in Shanghai. At Chungking, however, only 1,500 miles away from the latter port, a bushel of wheat was sold for only ten cents! There is an old saying in the rural areas here: "Pai li pu fang tsu," literally meaning "bulk (grain) is not sold one hundred li away." This reflects vividly the difficulty and high cost of transportation.

Another astounding example is that many orange growers in the To Valley often let their oranges rot in the field rather than pick them, because it is so difficult and so expensive to get them to market. On the other hand, only 800 moles away, at Hankow, imported oranges are sold for about a dollar (Yuan) for a half dozen.

Finally, also due to the same difficult transportation, it is tragic to see many farmers in the more remote hilly areas let their land lie idle for months on account of the high transportation cost of shipping bulky fertilizers, such as soy bean or tung oil cakes.

7. Mining and Manufacturing Patterns

Approximately less than 10 per cent of the population in the Szechuan Basin are engaged in the mining and manufacturing activities. The Basin's recent rapid development in mining and manufacturing has strengthened its position as a rich self-sufficient geographic region. In fact, mining and manufacturing largely supplement the agricultural and forestry pursuits, and thus, as we shall see later, help to bring forth an increasing efficient agricultural and forestry land-use in the Basin.

With the numerous metamorphic formations, volcanic intrusions, and the Jurassic-Triassic (coal and salt-brine bearing here) formations, particularly in the fringing and the anticlinal regions, the Basin's mineral deposits are abundant and varied. They include both metallic and non-metallic deposits, such as iron, copper, gold, silver, aluminum, salt, coal, petroleum, and asbestos. Among them, judging from the volume of present production, salt, coal, and iron are by far the most important. The

[1] One Yuan (dollar) in normal times (pre-war) has an exchange rate of approximately one-third of a United States dollar.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

316 Basin produces annually about 4,000,000 tons of coal, 200,000 tons of iron, and 100,000 ounces of placer gold.[1]

317 The production of brine-salt is the most important mining activity of the Basin. Brine salt is almost synonymous with Szechuan Basin in China. The Basin is the only region in all China to produce this commodity. Normally, the annual output of pure salt in the Basin is about 8,000,000 piculs (one picul equals 133 lbs.), with a total value between 30 to 35 million dollars (Yuan).

The salt-brine belt consists of a tract somewhat rectangular in shape, extending from the northern limit of the Basin adjoining Shensi to the Yangtse River at Lu-hsien on the east and to the Min River at Chien-wei on the west. Generally speaking, this belt lies north of the Yangtse and west of the Chialing River. But scattered brine fields are also found as far as the Feng-chieh districts, almost at the eastern-most edge of the Basin. The most important producing areas of brine-salt are, however, confined to the south central part of the Basin, particularly in the area between the lower Min and To rivers. Among all the producing areas, the Tze-Kung is the most noted (Fig. 20).

288 289 323 The Basin's manufacturing development has been greatly benefited by the presence of numerous agricultural and forestry products, such as silk, cotton, hemp, sugar cane, tung tree, wood pulp, and others. Long before the introduction of modern manufacturing, handicrafts of various kinds, relying principally upon the local raw materials, have been established in the Basin. At present, the most important manufacturing activities include cotton-weaving, silk-weaving, hemp-weaving, paper-making, glass-making, and tung-oil-refining.[2] The principal manufacturing centers of the Basin are located in the Tzeliuching, Chungking, and Lo-shan areas, where water transportation is most convenient.

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[1] Swer, op. cit., p. 42.

[2] T. A. Wong, "The Prospect and Economic Reconstruction of Szechuan," South West China Review, II, No. 3 (1940), 4.